

We claim:

sub a>1) A buoyancy apparatus for providing tension for an offshore riser comprising:

- a) at least one buoyancy element; and
- b) a frame comprising a plurality of vertical members externally disposed to said at least one buoyancy element and a plurality of connectors securing said vertical members to said riser.

- 2) The buoyancy apparatus of claim 1, wherein said buoyancy element comprises a buoyancy can.
- 3) The buoyancy apparatus of claim 1, wherein said buoyancy element comprises syntactic foam.
- 4) The buoyancy apparatus of claim 1, wherein said plurality of connectors comprise a first connector positioned above said at least one buoyancy element and a second connector positioned below said at least one buoyancy element.
- 5) The buoyancy apparatus of claim 4, wherein said plurality of connectors further comprise one or more connectors positioned between said first connector and said second connector.
- 6) The buoyancy apparatus of claim 5, wherein said one or more connectors comprise perforated plates.
- 7) The buoyancy apparatus of claim 1, wherein said plurality of connectors comprise radial arms.
- 8) The buoyancy apparatus of claim 1, wherein said plurality of connectors comprise a plate.
- 9) The buoyancy apparatus of claim 1, wherein said plurality of connectors comprise at least one of radial arms and a plate.
- 10) The buoyancy apparatus of claim 1, wherein said frame is comprised of tubular members.
- 11) The buoyancy apparatus of claim 1, wherein said frame is positively buoyant in water.

- 12) The buoyancy apparatus of claim 1, wherein said frame is neutrally buoyant in said water.
- 13) The buoyancy apparatus of claim 1, wherein said frame further comprises at least one bracing member external to said buoyancy element.
- 14) The buoyancy apparatus of claim 13, wherein said at least one bracing member comprises at least one of a diagonal bracing member and a horizontal bracing member.
- 15) The buoyancy apparatus of claim 13, wherein said at least one bracing member is radially arched.
- 16) The buoyancy apparatus of claim 2, further comprising one or more gas service lines, wherein said lines are positioned adjacent to said frame and adjacent to said buoyancy can and enter said buoyancy can at the bottom of said buoyancy can.
- 17) The buoyancy apparatus of claim 2, further comprising one or more gas service lines, wherein said lines are positioned within said frame and enter said buoyancy can at the bottom of said buoyancy can.
- 18) A buoyancy apparatus for providing tension for an offshore riser comprising:
 - a) at least one buoyancy element; and
 - b) a frame comprising a plurality of vertical members externally disposed to said at least one buoyancy element and a plurality of connectors securing said vertical members to a riser stem pipe, said riser stem pipe secured to said riser.
- 19) The buoyancy apparatus of claim 18, wherein said buoyancy element comprises a buoyancy can.
- 20) The buoyancy apparatus of claim 18, wherein said buoyancy element comprises syntactic foam.
- 21) The buoyancy apparatus of claim 18, wherein said plurality of connectors comprise a first connector positioned above said at least one buoyancy element and a second connector positioned below said at least one buoyancy element.

- 22) The buoyancy apparatus of claim 21, wherein said plurality of connectors further comprise one or more connectors positioned between said first connector and said second connector.
- 23) The buoyancy apparatus of claim 22, wherein said one or more connectors comprise perforated plates.
- 24) The buoyancy apparatus of claim 18, wherein said plurality of connectors comprise radial arms.
- 25) The buoyancy apparatus of claim 18, wherein said plurality of connectors comprise a plate.
- 26) The buoyancy apparatus of claim 18, wherein said plurality of connectors comprise at least one of radial arms and a plate.
- 27) The buoyancy apparatus of claim 18, wherein said frame is comprised of tubular members.
- 28) The buoyancy apparatus of claim 18, wherein said frame is positively buoyant in water.
- 29) The buoyancy apparatus of claim 18, wherein said frame is neutrally buoyant in said water.
- 30) The buoyancy apparatus of claim 18, wherein said frame further comprises at least one bracing member external to said buoyancy element.
- 31) The buoyancy apparatus of claim 30, wherein said at least one bracing member comprises at least one of a diagonal bracing member and a horizontal bracing member.
- 32) The buoyancy apparatus of claim 30, wherein said at least one bracing member is radially arched.
- 33) The buoyancy apparatus of claim 19, further comprising one or more gas service lines, wherein said lines are positioned adjacent to said frame and adjacent to said buoyancy can and enter said buoyancy can at the bottom of said buoyancy can.

34) The buoyancy apparatus of claim 19, further comprising one or more gas service lines, wherein said lines are positioned within said frame and enter said buoyancy can at the bottom of said buoyancy can.

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